WHAT IS CLAIMED IS:

1.   A method of video analysis comprising the steps of:

estimating a background reference frame for representing a background;

estimating geometric parameters for representing a scale variation of objects in a given frame;

obtaining a change detection map for distinguishing the background from the objects in the given frame; and

combining the change detection map with the geometric parameters to determine a measure of congestion of the given frame.

2.   The method of claim 1, wherein the step of estimating the background reference frame further comprises:

initializing each region of the image with a single node and a local model;

evaluating confidence limits of the local model;

evaluating the local model to determine a multi-modality, wherein if a multi-modality is detected, further comprising:

splitting the local model into multiple nodes.

3.   The method of claim 1, wherein said scale variation comprises variation in the object's width and height as a function of said object's position in the given frame.

4. The method of claim 1, further comprising the step of updating the background reference frame using the change detection map.

5. The method of claim 1, wherein the measure of congestion is a prolonged temporal event wherein a given percentage of a subway platform is crowded for a user-defined period of time.

6. The method of claim 2, wherein each of said multiple nodes is assigned to a new state.

7. The method of claim 4, wherein static pixels of the background reference frame are updated.

8. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for video analysis comprising the steps of:

estimating a background reference frame for representing a background;

estimating geometric parameters for representing a scale variation of objects in a given frame;

obtaining a change detection map for distinguishing the background from
the objects in the given frame; and

combining the change detection map with the geometric parameters to determine a measure of congestion of the given frame.

9. The program storage device of claim 8, wherein the step of estimating the

background reference frame further comprises:

  initializing each region of the image with a single node and a local
model;

  evaluating confidence limits of the local model;

  evaluating the local model to determine a multi-modality, wherein if a

multi-modality is detected, further comprising:

  splitting the local model into multiple nodes.

10. The program storage device of claim 8, wherein said scale variation

comprises variation in the object's width and height as a function of said object's

position in the given frame.

11. The program storage device of claim 8, further comprising the step of

updating the background reference frame using the change detection map.

12. The program storage device of claim 8, wherein the measure of

congestion is a prolonged temporal event wherein a given percentage of a subway

platform is crowded for a user-defined period of time.

13. The program storage device of claim 9, wherein each of said multiple

nodes is assigned to a new state.

14.   The program storage device of claim 11, wherein static pixels of the background reference frame are updated.